

APPARATUS AND METHOD FOR REMOTE VIEWING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] Applicant claims priority under 35 USC 119 to provisional patent application 60/704,385 filed Aug. 1, 2005. This is a continuation of application Ser. No. 11/440,673 now pending, filed May 25, 2006.

BACKGROUND

[0002] 1. Field of the Invention

[0003] This invention relates to an energy conserving video monitoring system for monitoring a remote location at a distance. In particular this invention relates to an apparatus and method to view a remote location with a battery powered camera that uses a minimum of energy.

[0004] 2. Description of the Prior Art

[0005] Often times there is a need to remotely monitor a location. For example there may be a need to monitor an elderly person or a young child. It may be desirable to remotely monitor for the presence of mail in a mail box as in applicant's own Pat. No. 6,879,255. Or it may be desirable to remotely monitor equipment, wildlife or for security for example. In many of these applications there may not be power readily available and a remote camera may need to operate on batteries. In these situations a common problem is that the camera battery can run out of power fairly quickly forcing the user to travel to the remote location to replace a battery. Solar power can be used but can be expensive and unreliable in many locations.

[0006] Applicant's prior Pat. No. 6,879,255 provides a system for remotely monitoring for mail in a mailbox. The system provides a battery 16 for a remote camera 18 in the mailbox. The system provides a sleep mode, where the camera 18 and lights are not on all the time, only when needed to conserve battery power. But it has been found that the system still draws significant power in sleep mode, waiting for a signal from transmitter 38 to turn the camera on.

[0007] As can be seen, there is a need for a remote monitoring system that will use less power and thus require less effort to operate.

SUMMARY OF THE INVENTION

[0008] The present invention is an instantaneous remote viewing system comprising; a battery powered camera requiring a first voltage to operate and an RF transmitter to send an activation signal to the camera. The activation signal has a duration. A camera power circuit includes a normally sleeping signal receiving circuit and a first timer wherein the first timer periodically activates the signal receiving circuit to check for the presence of the activation signal. The timer turns off the signal receiving circuit if the activation signal is not present and turns on the camera if the activation signal is present and wherein the time the signal receiving circuit sleeps is less than the activation signal duration. Such that the remote viewing system can conserve battery power by keeping the receiving circuit off except for during periods that are slightly shorter than the duration of an activation signal such that an activation signal will not be missed.

[0009] Further the present invention includes a voltage booster circuit to maximize the usable power from a battery. The booster will boost battery voltage up to at least a minimum required by the camera.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] In the drawings, closely related items have the same number but different alphabetic suffixes.

[0011] FIG. 1 shows the apparatus of the preferred system.
[0012] FIG. 2 shows a block diagram of the circuit of the device.

[0013] FIG. 3 shows a flow chart for the operation of the device.

[0014] FIG. 4 shows a comparison of the activation signal to the timer period

DESCRIPTION

FIG. 1

[0015] FIG. 1 shows the remote viewing camera system 10. The remote viewing camera system 10 can include a control transmitter 20, a remote camera system 30, a receiver 40 and a monitor 50. The control transmitter 20 can include a button 22 used to activate the remote camera system 30, to wake it up from a sleep mode. The control transmitter 20 can also include buttons 24 to remotely control the position of the camera 34, button 26 to control sound transmitted from remote camera system 30 and button 28 to control a light 32 associated with the remote camera system 30. The control transmitter 20 can include an antenna 29 to send an encoded control signal S1 to remote camera system 30.

[0016] The remote camera system 30 can include a light 32 and a camera 34. The camera can include a dome housing 36 and the camera will include camera control circuit 38. The remote camera system can send a signal S2 to a receiver 40 that can receive the signal S2 and convert it to a format that can be displayed on a monitor 50 that might be a computer or home TV.

FIG. 2

[0017] The camera control circuit 38 receives a signal S1 from control transmitter 20. The camera circuit control 38 can include a battery 100 that provides the main power source. The battery 100 can be a rechargeable battery that has a solar powered charger 102. Power from the battery 100 can be applied to two timer circuits 110 and 112. The timer circuit 110 runs constantly but uses very little power. The timer circuit 110 counts a preset amount of time, typically in the range of a few seconds and then activates switch 120 to activate the receiver decoder circuit 122. The receiver decoder circuit 122 still uses very little power but more than the timer circuit 110. When activated the receiver decoder circuit checks for the presence of activation signal S1. If the activation signal S1 is present then the receiver decoder circuit 122 sends a trigger signal S3 that activates the second timer 112 that in turn closes switch 130 to apply camera power 132 to remote camera system 30 which includes camera 34 and video transmitter circuit 140. Power 114 applied to the timer circuits 110, 112 can be very low, power 116 to receiver decoder circuit 122 may be higher and power 132 to the remote camera will be the highest with the camera 34 requiring voltage in the 8 volt range for example. When the signal S1 is no longer present and when a set time has passed with camera 34 on, the timer 112 can send a signal S4 to turn